Protection and the Tariff

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I am highly indebted to Dr. Bell for his helpful comments on the subject-matter and organization of this paper.
I. Introduction and Background

Proponents of freer trade often argue in Congressional hearings, in classrooms, and in private conversations that our country would benefit from lower tariff levels. Yet it is more rare that they go beyond this to the practical question of which tariffs to reduce, and how much. Our foreign trade barrier will certainly not be completely eliminated with one flourishing gesture. Where should we start?

There are some tariffs which could be lowered without harm to domestic producers. Free traders and protectionists alike would agree that these should be reduced at least to the point where foreign goods are just able to compete with American products. Proposals for further tariff reductions, however, lead to a clear split among those that have considered the problem. Protectionists, on the one hand, would argue that no tariff should be cut if such a reduction would endanger an American manufacturer. No domestic producer should be forced out of business by a foreign one. Free traders\(^1\) would counter this by saying that if we are to reap the full benefits offered by the theory of comparative advantage, we must be ready to push our tariffs lower, even though some American manufacturers might be hurt by the increased

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1. I use this term to refer not only to those who seek the complete abolition of barriers to the flow of goods between countries, a distant and perhaps Utopian goal, but to include those who feel that some tariffs should be lowered beyond the point where American producers can only just compete.
foreign competition. That this will be to the benefit of our country is outside the scope of this paper; the thesis is presented in many economics textbooks.2

The next question, then, is to determine which tariffs should be reduced, and by how much. One possible approach might be to start with those tariffs whose reduction would disturb our economy the least. We might ask, how many people would be affected? Are they located in an area where they could find new jobs easily? Do they have special skills, such that a change of jobs might deprive them of the just rewards for long training? Will their savings be large enough to carry them over a period of unemployment? Could the tariff reduction be arranged in such a way as to avoid the need for layoffs, eliminating new hiring in the industry affected instead? These questions are complex and difficult to answer. Any decision would be subjective. The difficulty of picking and choosing has probably led many politicians to the conclusion that the only way out is to protect all American manufacturers.

In the past, several attempts have been made to bring the process of tariff reductions on to a more rational basis. During the 1920's, an effort was made to turn the tariff-making process into a more scientific and exact procedure. There was a clause in the tariff acts of 1922 and 1930 known

as the "flexible provision." According to this article, the Tariff Commission was to set duties at that level necessary to equalize costs of production of American and foreign producers. This was to be done scientifically, completely divorced from political pressures; hence the name, "scientific tariff." The work of the Tariff Commission was to find out the conversion costs of a given article domestically and abroad, then to set the tariff at such a level as to make up the difference between the two. The expected result was to be that American manufacturers would not be subjected to "unfair" competition caused by lower labor costs of Japan or lower rent in Australia. As J. M. Jones points out, if this principle of equalizing costs of production had been carried far enough, if the Tariff Commission had been "scientific" enough, the volume of United States imports would have been greatly reduced. Why should we import goods that can be bought for the same cost from domestic producers? Jones adds that there was very little danger of this, since the "flexible provision" soon became a sham. The Tariff Commission was faced with the impossible chore of determining the cost of producing each good in each foreign country, subject to constant revision due to changing prices and techniques.

3. For an excellent, brief discussion of this provision, see J. M. Jones, Tariff Retaliation, pp. 19-25.

4. Ibid., p. 21.

5. In fact, domestic goods would probably have been cheaper; transportation costs are usually not counted as "costs of production," and hence are over and above foreign manufacturing costs plus the tariff, which were expected to equal domestic production costs.
Many discussions supporting the scientific tariff could be cited, especially at the time of passage of the Fordney-McCumber Tariff Act of 1922, when the concept was first passed on by the Congress. Its supporters went into raptures over the great advantages to be gained from conversion cost tariffs. For example:

Did it ever occur to you that profit has nothing to do with the tariff—or shouldn't? Profit is set by style, merchandising, turnover and efficient production. We would all start from scratch, foreign as well as domestic manufacturers, were conversion costs equalized by the tariff. Conversion-cost duty brings us all abreast of the same mark. And the fellows who lead to the profit tape are those who can cover the most manufacturing and selling ground in style, merchandising, turnover and efficient production. A tariff has often been a premium for inefficiency. The margin covered up by incompetence. Conversion cost strips it to a racing chassis. The best car and driver win.6

The "scientific" argument said that the tariff should be set at such a level as to equalize the costs of production. These costs were considered to be the costs of converting the raw material input into a finished product. The variations in raw materials costs due to transportation costs, raw material tariffs, or differing sources had to be taken into account; for the most part, however, it was felt that the American producer needed protection because his conversion costs, the cost of converting raw materials into finished goods, were higher than abroad, due to higher payments to the factors of production in our country.

This distinction between raw materials costs and conversion costs is not dead in tariff literature. James E. Meade

has mentioned it in his presentation of the nature of the ad valorem tariff rate. Professor Meade presents the case of a shirt manufacturer who buys cotton at $4 per shirt in the world market, who sells shirts at $12 apiece and is protected by a specific tariff of $2 a shirt. Meade says that the true ad valorem rate is 33 1/3%, not 20%. That is, his ad valorem rate is the tariff cost over the conversion costs in the exporting country, $2/$6. This is the percentage by which a protected country's conversion costs can exceed those of the country discriminated against if they are to be equally competitive.

Meade makes the assumption that the raw materials costs are the same in each country. If the ad valorem rate is 20%, as it is in this case, that means that total domestic costs can be 20% higher than foreign costs and still be competitive. But if each of them must spend a fixed amount on raw materials, $4 in the example, then the whole variation will come in the conversion costs of the two manufacturers. This might be clarified by the following approach.

<table>
<thead>
<tr>
<th>Domestic Costs</th>
<th>Foreign Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Raw Materials Cost</td>
<td>4</td>
</tr>
<tr>
<td>8 Conversion Costs</td>
<td>6</td>
</tr>
<tr>
<td>_____________</td>
<td>_____________</td>
</tr>
<tr>
<td>12 Total Costs</td>
<td>10</td>
</tr>
</tbody>
</table>

We can see that the 20% ad valorem equivalent rate allows the domestic producer's conversion costs to be 33 1/3% higher than foreign conversion costs, and still be competitive.

It should be clear that while this presentation is based on a distinction between conversion costs and raw material costs, as was the scientific tariff, there is a pronounced difference between the two approaches. The earlier presentation was aimed at setting the tariff in such a way as to make up the difference between varying conversion costs. Meade's presentation has eliminated the "should." He is merely presenting what he would consider to be a more accurate way of looking at a given ad valorem level.

Clarence Barber has presented his ideas on this relationship between the tariff level and raw materials costs in an article on Canadian Tariff Policy. He says,

Consider for example a product on which the tariff provides for an ad valorem rate of duty of 20 percent. Suppose also that one-half the value for duty purposes of such a product consists of raw materials that a Canadian manufacturer can buy at world market prices. Then, the 20% tariff on the final price of the good provides the Canadian manufacturer with an amount of protection equivalent to 40 percent of the value he adds to the product through manufacture. In other words, with a 20 percent tariff on this product, the Canadian manufacturer's conversion costs can exceed those of his foreign competitor by 40 percent and his price will still be competitive.

Barber is concerned here with the same concept as the one presented by Meade. In his case, half of the foreign

9. Ibid., pp. 523-524.
production expenses are for raw materials, which can be bought at equal prices by domestic producers. His example might be formulated in the following way. Assuming a 20% ad valorem tariff,

<table>
<thead>
<tr>
<th>Domestic Costs</th>
<th>Foreign Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>$50 Raw Material Costs</td>
<td>$50</td>
</tr>
<tr>
<td>$70 Conversion Costs</td>
<td>$50</td>
</tr>
<tr>
<td>$120 Total Costs</td>
<td>$100</td>
</tr>
</tbody>
</table>

In order to be competitive with domestic costs, total foreign costs plus the tariff on those costs must equal total domestic costs. If raw material costs are $50 abroad, they will be the same domestically. The whole cost variation will be in conversion costs, which can be $20 higher domestically than abroad; thus, the manufacturer's effective protection on his costs of conversion is 40%.

Barber goes on to say,

If the ratio of cost of materials to the value of the finished product in the above example were three-quarters rather than one-half, a tariff rate of 20% would have provided an effective protection of 80%.

This can be shown as follows:

<table>
<thead>
<tr>
<th>Domestic Costs</th>
<th>Foreign Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>$75 Raw Material Costs</td>
<td>$75</td>
</tr>
<tr>
<td>$45 Conversion Costs</td>
<td>$25</td>
</tr>
<tr>
<td>$120 Total Costs</td>
<td>$100</td>
</tr>
</tbody>
</table>

In this case, the amount by which domestic conversion costs could exceed competitive foreign ones would be $20; expressed 10. *Ibid.*, p. 524.
as a percentage of foreign conversion costs, his effective protection is 80%.

Barber suggests that the effective tariff, as he calls it, should be given more prominence in considering tariff reductions, and specifically in GATT negotiations. He cites a case where tariffs were reduced to 20% on refrigerators and to 22½% on storage batteries. He estimates that these two tariffs give not much more than 20% effective protection to manufacturers of refrigerators, and close to 50% for storage battery producers. He says, "One would also suppose that in negotiating tariff concessions under GATT, the Government might tend to concentrate its tariff reductions on products on which the effective protection at present is high." 11 One might hope this would be the case, one might recognize it as a rational approach, but one should not expect it under present conditions, where every producer is given enough protection to survive. At present free trade is our watchword only so long as our manufacturers are not hurt.

Outside of these two instances, the distinction between conversion costs and total costs seems to have found no place in the tariff literature. Ellsworth gives a very thorough development of the theory of free trade; then he says, "Having gained some understanding of the social significance of liberal and restrictive policies, we are now in a position to examine how a commercial policy, once determined, is implemented." 12

11. Ibid., p. 525.
He gives an extended discussion of different types of treaties and exchange controls; but nowhere does he concern himself with conversion costs and their relationship to protection. Viner, in his classic books *Studies in the Theory of International Trade* and *International Economics*, makes no mention of this distinction, although he has chapters on such subjects as measuring the height of the tariff. Enke and Salera discuss several methods of approaching tariff reductions. Four of the six methods presented there concern the reduction by a certain percentage, or to a certain maximum, or some combination or variation of these two, of the ad valorem tariff rates. Yet they make no mention of the fact that due to a different ratio of raw materials costs to total costs, the same ad valorem rate might afford different producers widely varying amounts of protection, in terms of the percent, by which their conversion costs can exceed competitive foreign ones.

II. The Concept of Effective Protection

The author feels that the distinction between conversion costs and total costs can still be the basis for a rewarding and worthwhile approach to the tariff question. Barber and Meade have used this distinction to compare competitive conversion costs of a protected domestic producer with those of a foreign manufacturer. It should be possible to shift the basis of comparison in such a way as to give an equally accurate measure of the degree of protection afforded by the

tariff structure, while eliminating some of the complications involved in Barber and Meade's approach.

This second method would involve the comparison of the conversion costs of a protected firm with the conversion costs which the same firm could maintain and be in an equally competitive position with imports, were the protective tariff removed. This might be called a measure of the effective protection afforded a manufacturer by the tariff structure. The numerical results of this approach would be the same as those obtained through Meade and Barber's method, in most cases; yet stating the concept in this way eliminates the need for several assumptions and complications involved under their approach. These are essentially problems of integrating some differing raw materials costs into the approach. Raw materials costs are assumed to be constant in both cases; but in the approach followed by Meade and Barber, we must allow for the cases where such costs are not equal. What about the situation where raw materials are tariffed in the country competing with us? This would have to be taken into account in determining Barber's effective protection. Where transportation costs have an impact on raw materials costs, these too would have to be incorporated. But if we are comparing the same firm with and without protection, these problems would not arise. Yet the latter is an accurate measure of the amount of effective protection which the tariff structure gives a manufacturer.

Let us examine an illustration of this concept, and then
attempt to find a general formula for determining the effective protection level. Take the case of a domestic manufacturer, protected by a 30% ad valorem tariff, 50% of whose total costs are raw materials costs. Here we might continue to follow the same presentation used in the former cases.

<table>
<thead>
<tr>
<th>Domestic, protected</th>
<th>Domestic, unprotected</th>
</tr>
</thead>
<tbody>
<tr>
<td>$50 Raw Materials Costs</td>
<td>$50</td>
</tr>
<tr>
<td>$50 Conversion Costs</td>
<td>$26.9</td>
</tr>
<tr>
<td>$100 Total Costs</td>
<td>$76.9</td>
</tr>
</tbody>
</table>

In other words, the competitive protected conversion costs can be \( \frac{50}{26.9} = 1.851 \) of unprotected costs, or can exceed unprotected costs by 85.1% and still be equally competitive.

The derivation of a general formula for determining the effective level of protection is given in Appendix 1. It will be seen that where

\[
x = \text{effective tariff level}
\]

\[
w = \text{ad valorem tariff on raw materials}
\]

\[
y = \text{ad valorem tariff on finished product}
\]

\[
z = \% \text{ of raw materials costs in total costs of protected producer},
\]

then

\[
x = \frac{y}{1 + \frac{wz - wzy}{w - z - zy}}
\]

Where the tariff level on raw materials is zero, it can readily be seen that
\[
x = \frac{y}{1 - z - zy} \tag{14}
\]

It can be seen that increases of \(y\) or \(z\) will increase the degree of effective protection; and increase in \(w\) would reduce \(x\).

The concept of effective protection brings into light an interesting phenomenon, the effect of cyclical price changes on the degree of protection afforded by a given tariff. When prices rise or fall, it is normal for the prices of different types of goods to shift in varying proportions. Table (see page 14) shows that from 1939 to 1944, while the unit value index of United States imports of crude and semi-manufactured materials rose by approximately 43%, the index of finished manufactures rose by 140%. What effect would this have on the protection afforded by the tariff structure? During that period a fixed ad valorem rate would have afforded a given manufacturer progressively less protection. A growing proportion of the value of his output would have taken the form of conversion costs, even if he made no changes in his manufacturing process. During the five years after the war, on the other hand, prices of finished manufactures rose by about 20%, and then fell back slightly below their 1945 levels; crude and semi-manufactured imports prices rose by over 40%. This would have tended to increase the degree of protection afforded by a fixed ad valorem rate almost back to its 1939 level.

14. The denominator of this equation should never be considered negative; where \(z \neq zy \div 1\), the denominator should be considered as approaching 0, and the effective protection as approaching infinity.
In his examination of the sterling area, F. V. Meyer examines the shifts of manufacturing and raw materials prices between 1870 and 1939. He finds that during four of them the terms of trade shifted against Great Britain; in the other four, including all after World War I, Great Britain benefited from the shift in terms of trade. Since Great Britain is largely an importer of raw materials and semi-manufactured goods, and an exporter of manufactured articles, this means that during the three cyclical slumps that took place in the interwar period, the prices of raw materials fell more than those of manufactured goods. The result of this would be a decrease in the degree of effective protection during the slumps, and conversely an increase in protection during boom times. The assumption is generally valid that raw materials and manufactured goods prices shift in the same way for all countries of the world.

III. Some Complications

This brief presentation of the concept of effective protection brings to mind several questions. Why should raw materials costs be excluded in determining the degree of protection? What about other costs, such as the cost of machines, or labor? How should we handle the case where raw materials come in under a tariff of their own? What about transportation?

15. F. V. Meyer, Great Britain, the Sterling Area and Europe, p. 65.
16. 1872-4; 1890-3; 1899-1900; 1907-8.
17. 1884-5; 1920-1; 1929-31; 1937-8.
The justification for the exclusion of raw materials costs in determining the degree of protection afforded lies not in the fact that their costs are universally constant, for foreign as well as domestic producers; the concept of

<table>
<thead>
<tr>
<th>Year</th>
<th>Crude and Semi-manufactured</th>
<th>Finished Manufactures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1923</td>
<td>172.9</td>
<td>152.2</td>
</tr>
<tr>
<td>4</td>
<td>171.9</td>
<td>144.1</td>
</tr>
<tr>
<td>5</td>
<td>199.0</td>
<td>165.8</td>
</tr>
<tr>
<td>6</td>
<td>196.2</td>
<td>161.4</td>
</tr>
<tr>
<td>7</td>
<td>181.0</td>
<td>145.9</td>
</tr>
<tr>
<td>8</td>
<td>168.6</td>
<td>145.5</td>
</tr>
<tr>
<td>9</td>
<td>163.2</td>
<td>142.9</td>
</tr>
<tr>
<td>1930</td>
<td>130.9</td>
<td>135.2</td>
</tr>
<tr>
<td>1</td>
<td>96.6</td>
<td>111.6</td>
</tr>
<tr>
<td>2</td>
<td>73.7</td>
<td>85.4</td>
</tr>
<tr>
<td>3</td>
<td>75.3</td>
<td>89.7</td>
</tr>
<tr>
<td>4</td>
<td>97.2</td>
<td>101.9</td>
</tr>
<tr>
<td>5</td>
<td>87.9</td>
<td>98.8</td>
</tr>
<tr>
<td>6</td>
<td>112.1</td>
<td>102.1</td>
</tr>
<tr>
<td>7</td>
<td>100.7</td>
<td>103.2</td>
</tr>
<tr>
<td>8</td>
<td>102.1</td>
<td>99.3</td>
</tr>
<tr>
<td>9</td>
<td>119.2</td>
<td>121.7</td>
</tr>
<tr>
<td>1940</td>
<td>111.3</td>
<td>109.0</td>
</tr>
<tr>
<td>1</td>
<td>124.0</td>
<td>159.9</td>
</tr>
<tr>
<td>2</td>
<td>135.6</td>
<td>184.4</td>
</tr>
<tr>
<td>3</td>
<td>145.3</td>
<td>241.0</td>
</tr>
<tr>
<td>4</td>
<td>151.6</td>
<td>246.2</td>
</tr>
<tr>
<td>5</td>
<td>175.9</td>
<td>273.3</td>
</tr>
<tr>
<td>6</td>
<td>204.4</td>
<td>297.2</td>
</tr>
<tr>
<td>7</td>
<td>213.1</td>
<td>280.9</td>
</tr>
<tr>
<td>8</td>
<td>209.5</td>
<td>256.7</td>
</tr>
<tr>
<td>9</td>
<td>217.3</td>
<td>256.7</td>
</tr>
</tbody>
</table>

effective protection presented in this paper, as opposed to
that of Barber and Meade, would hold even if this were not
the case. Rather it lies in the fact that the raw material
input of a manufacturing process is assumed to be fixed for
the producer, in both price per unit input and volume per
unit output. It is in the process of manufacturing these
raw materials, in the adding of value, that the producer can
arrange the factors of production in varying proportions,
and hence vary his costs. It is in this process of adding
value that he needs, and gets, protection; for it is largely
the conversion costs that can vary, while raw materials needs
and costs are fixed for the producer.

As for the other costs, such as labor or interest, it
should be clear that they are the components of the manufac-
turer's value added. It is these that can be combined in
different ways, giving a more or less efficient method of
production. We are left with a clear division between the
raw material inputs, considered as given to the manufacturer,
and the conversion costs, the value added, on which he needs,
and gets, protection.

The assumption of fixed raw material inputs is not com-
pletely accurate; jewelers, under pressure of competition,
might be more careful not to lose gold dust; glove makers
might plan the use of hides in order to allow less waste.
But in general these variations will be small; changes in the
competitive position due to greater or less protection will
put pressure on the manufacturer mainly to reduce the costs
of converting these raw materials into finished goods.

The question of tariffs on raw materials can readily be answered. A 10% tariff on leather can be incorporated in the determination of the degree of effective protection afforded by a 20% tariff on handbags, in the following manner. The 1947 Census of Manufactures informs us that the total output of the leather handbag industry of that year was valued at $154 million; of that amount, $76 million—approximately half—was spent on materials, parts, containers and supplies, as near a measure as the Department of Commerce now gives of the raw material input. Let us remember that what we are looking for is a measure of the amount by which the tariff structure permits a producer’s manufacturing costs to exceed those of hypothetical non-protected manufacturer of the same article, and still compete equally well with imports.

If \(a\) = the tariff-free cost of the raw materials necessary for one unit of output; \(b\) = manufacturing costs per unit output in an unprotected state; \(c\) = raw material costs per unit under a 10% tariff; and \(d\) = manufacturing costs per unit in the protected state; then total costs per unit in the tariff-free country are \(a \neq b\); in the protected country, \(c \neq d\). With a tariff on finished goods of 20%, total costs in the protected country can be 20% higher than in the free one and still be equally competitive with imports from a third country.


In other words,

\[(a \neq b) \quad 1.20 = c \neq d\]

But \(c = d\) in this case, since half of the total costs of the industry are raw materials and half value added; and \(c = 1.1a\), since raw material prices are 10% higher in the protected country, because of the 10% raw materials tariff. Putting these together, we get

\[(0.91d \neq b)1.20 = 2d\]

\[d = 1.32 \ b.\]

This means that if the conversion costs of a protected industry—the cost of changing raw materials into finished output—exceed those of the same industry in a hypothetical unprotected situation by 32%, both will be equally competitive with imports. By thinking of both the countries involved as the United States under differing conditions—our present tariff on the one hand, and no import duties on the other—we can see that we are considering the degree to which a certain tariff structure—our own, at present—protects a manufacturer, as compared with the same manufacturer under free trade conditions.

In the terms of the formula given on page 11,

\[w = 10\%\]

\[y = 20\%\]

\[z = 50\%\]

\[x = \frac{y}{1 - w - z - zy} = \frac{0.20}{1 - 0.10 - 0.50 - 0.01} = \frac{0.16}{0.50} = 32\%\]
How do transportation costs fit into this picture? In order to answer this question accurately, a distinction must be made between the two ways of looking at effective protection. In the meaning of that concept introduced in this paper, where the comparison is between the same firm's competitive conversion costs with and without protection, transportation costs need not be considered. They will undoubtedly affect the ability of the producer to compete with imports; but they will be the same in either case, and need not be reckoned with in dealing with the degree of effective protection afforded a manufacturer by the tariff.

In the sense in which Barber and Meade used the term, on the other hand, where the comparison is between a protected producer and a foreign competitor, transportation costs would have to be taken into account. If they could be quantified, they could be given the same treatment as a tariff on raw materials, causing a variation in these costs among the competitors of the different nations. A difficulty of this approach lies in the fact that we often compete with more than one country. If we compete with Japan and France in the production of a certain article, raw material costs might vary widely between those two countries because of transportation costs and raw materials tariffs. It would be difficult to arrive at an accurate measure of the degree of effective protection in such a case.
IV. Cases

Let us examine just what this idea would mean in several specific cases. The fur felt hat industry is a good example of the relevance of the effective tariff level. The manufacturing of fur felt hats can be broken up into several fairly distinct stages. The raw materials used are skins—mostly rabbit and hare skins. Fur cutters take the hair from the skins, making hatters' fur, which is molded by a separate industry into hats and hat bodies. "Practically all the raw skins used by the domestic fur cutters are imported and come from the same sources as those which supply foreign fur cutters."20 These skins are imported duty-free into the United States. Since 1947, the tariff on hatters' fur has been a specific one, 47½¢ per pound, but not less than 15% or more than 35% ad valorem. The 1947 Census of Manufacturers21 shows that, while the total value of the output of the hatters' fur industry was $23,823,000, over $15 million of this was materials, parts, containers and supplies, as near a measure as the Department of Commerce gives of the raw materials used in the process. That leaves something over $8 million as the value added by the hatters' fur industry. So a 35% tariff (assuming the maximum for a minute) on an article whose final value is approximately 2/3 raw materials, imported at world prices, means that the American hatters' fur industry's

conversion costs can be 450% of the same firm's equally competitive, unprotected conversion costs. To put this another way, in order for the same manufacturer to be in an equally strong competitive position against world imports if the tariff were removed, he would have to reduce his total prices by 35%; since the cost of the skins is out of his control, the whole cut would have to come from conversion costs, which would have to be cut to 22% (= 1/4.5) of his present level.

Even if the world price of fur rises, so that the minimum ad valorem equivalent (15%) is charged, the American producer's costs can still be 60% higher than an equally competitive, non-protected manufacturer.

Let us move on to the second step in the process, molding cut fur into hats and hat bodies. Here the discussion becomes more complicated. Since 1950 the duties on hats and hat bodies are as follows:

<table>
<thead>
<tr>
<th>Value Range</th>
<th>Duty</th>
</tr>
</thead>
<tbody>
<tr>
<td>$12 or less per dozen</td>
<td>55% ad valorem, but not less than $1.25 per dozen</td>
</tr>
<tr>
<td>$12-$18 per dozen</td>
<td>47%% ad valorem</td>
</tr>
<tr>
<td>$18-$30 per dozen</td>
<td>40% ad valorem</td>
</tr>
<tr>
<td>More than $30 per dozen</td>
<td>$8 per dozen plus 12% ad valorem</td>
</tr>
</tbody>
</table>

The 1947 Census of Manufactures shows that slightly over one-half of the value of fur felt hats and hat bodies is made up of materials, parts, containers, and supplies. If we assume

22. See Appendix 2, case 1, for the method of attaining this figure.
that the United States cost of hatters' fur is 15%-35% higher than they would be without tariff, then we find that the American producer starts off at a disadvantage in relation to his foreign competitor; half his costs are 15%-35% higher. But that is only a part of the story. Almost all the competitive imports of hats are valued at $9-$24 per dozen, and hence are protected by a 40%-55% ad valorem tariff. Taking the case where hatters' fur is priced in such a way as to give a 25% equivalent ad valorem tariff, and an American manufacturer of hats selling at $15 per dozen, let us see what his effective tariff protection is. We shall further assume that one-half of his costs are hatters' fur, the other half being value added by him. We can figure from this that the effective protection given the American manufacturer amounts to almost 80%. A 47½% ad valorem tariff means that his manufacturing costs can be 80% higher than a foreign producer's and still be fully as competitive.

The lapidary industry is another one in which the costs of raw or semi-finished materials form a large part of the value of the final product. According to the Department of Commerce, out of a final output valued at $26,499,000, materials, parts, containers and supplies accounted for $17,163,000. Uncut stones are on the free list. Cut diamonds,

24. United States Tariff Commission, Women's Fur Felt Hats and Hat Bodies, p. 3.

25. The exact figures are: materials, parts, containers and supplies, $67.935 million; value added, fuel, commission and contract work, $63.188 million.

26. See Appendix 2, case 2.

rubies and sapphires come in with a 10% tax, all other precious stones at 5% ad valorem. This seemingly small tariff assumes a changed significance when we realize that it gives American precious stone cutters a 16 2/3% or 37 1/2% cost advantage over unprotected producers, depending on what type of stone is being cut. A numerically small ad valorem tariff can give a much higher level of effective protection if a high proportion of the manufacturer's costs are raw materials or, as in the case of the hat manufacturers, semi-finished inputs, costs of which are more or less fixed for the manufacturer.

As an example of the difficulties involved when we carry this analysis to a more complex manufacturing process, let us examine briefly the American motorcycle industry. The problems involved here are two-fold. The first is the multiplicity of raw and semi-finished materials used by the manufacturer. Secondly is the fact that the process cannot meaningfully be broken down into separate steps; the same manufacturer makes parts and assembles them into finished motorcycles.

The tariff on motorcycles is at present 10%; on motorcycle parts, 15%. The Department of Commerce reports that over half of the final value of motorcycles is in materials, parts, containers and supplies. We might think from these facts alone that the American motorcycle manufacturer is

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28. See Appendix 2, case 3.
getting a bad deal; he has to buy parts at a price further above the foreign price than he is able to sell his finished goods; in the terms we have been using, he is receiving almost no effective protection from his 10% tariff.

If the American motorcycle manufacturer bought parts, assembled them, and sold finished machines, this would be a fair conclusion; but in fact this is not the case. American manufacturers make both parts and machines. In fact, in every post-war year except one the largest American manufacturer, Harley-Davidson, has lost money on the machines and only come out in the black because of his parts and accessories sales.

This short look at the motorcycle industry certainly points up some of the difficulties involved when the concept of effective protection is applied to a complex manufacturing process. Rather than invalidating the argument, however, these complexities only indicate the necessity for careful application. In deciding on the degree of effective protection afforded by a given ad valorem rate, we must take into account the proportion of the total value of the output which is added by the manufacturer concerned, as well as the tariff levels of the goods which he buys and sells. The fact that there is a different tariff on certain goods intermediate in the process, more manufactured than what he buys but less so than what he sells, may have relevance in determining which parts of the manufacturing process are most efficient, which parts he might profitably drop from his production line; but
it has no relevance in determining the overall degree of tariff protection afforded the manufacturer. The man who buys one unit value of tariff-free steel, adds another unit value of manufacturing and processing, and sells a motorcycle protected by a 10% tariff, is receiving 20% effective protection of his manufacturing process, whether the tariff on parts is 0 or 50%.

V. Practice and Policy

How could the concept of effective protection discussed in this paper best be incorporated into a policy of tariff reductions? This could be done in either one of two ways: by setting a maximum level of effective protection which we are willing to give a producer, with the maximum being slowly reduced over time, and with all rates giving more than that amount being cut back to that level; or simply by concentrating in our tariff reduction on the highest effective tariffs.

The President has the legal right to follow either policy even now, within limits. He can reduce any tariff level down to 50% ad valorem; and those already below that height he can reduce by 5% a year from the level existing in 1955. Although the Tariff Commission must hold hearings for any industry that feels it is being given insufficient protection, the President is not bound by their findings. If the Tariff Commission recommends that the escape clause provisions be brought to bear and tariffs on a certain product be raised,
the President could legally refuse to act on their recommendations. However, it seems certain that if the President were to apply the principle suggested in this paper, Congress would step in and remove his freedom to act. The United States could never follow a stable free trade policy without at least the tacit consent of Congress.

This does not mean that it should be up to Congress to set the maximum. This job could probably best be done by the executive department, because of its ability to represent the whole country, and because any free trade feeling which exists in our government seems to be centered there. The work of correlating effective protection and ad valorem rates could be done by the Tariff Commission; perhaps they could set the maximum too, although that would necessitate a change of outlook from the present protection-oriented Commission. This correlation of rates should not prove prohibitively difficult. The Census of Manufactures now contains most of the information necessary. Shifts of classification would be required to give some of the additional data needed. One difficulty might arise in the case where several different raw material inputs are used, which need be separated for our purposes due to differing tariff rates among them. In such cases, it should be possible for the Department of Commerce to indicate the necessary subdivisions in their category, "materials, parts, containers and supplies."

The question of the level at which the maximum should be set is a relatively minor one for the purposes of this paper.
Probably the best way to start would be to determine the degree of effective protection afforded by the present tariff structure. Then the maximum could be set in such a way as to reduce the tariffs for a few highly protected industries. The maximum could then be reduced, moving down as fast as the economy and the outlook of the people would allow. Or, following the other approach, we might simply concentrate on those tariffs affording the highest effective protection in our negotiations under GATT. This would probably be a simpler approach, although it would necessitate a change in our approach to GATT, as it would a change of approach to protection in general.

In a sense, the present tariff act might be considered a precedent for the idea that there should be some maximum degree of tariff protection; according to this act the President is empowered to cut any ad valorem rates over 50% back to that level. This is probably based to a large extent on the feeling that more protection than that would probably not be needed by any producer, except in unusual cases. It is easy to see that there is a large gap between this idea and the free-trade frame of reference of this paper. One suggests that more protection than some maximum will probably not normally be needed. The other says that more protection than the maximum will not be allowed, even if it is needed. Yet both maximums would be more equitable, in that they would affect all manufacturers in more nearly the same way, if they were expressed in terms of effective protection than than in
ad valorem rates.

While those who set the tariffs in our country would have to be concerned with the degree of effective protection a given rate would afford, the most feasible way of publishing the tariff regulations would be in ad valorem and specific rates, as at present. This would have the advantage of ease of application, as well as being more in line with the needs of domestic importers and foreign exporters.

One major and two minor exceptions to our general protection maximum should be mentioned. The major one is that of defense. If an industry is really necessary to our maintaining a state of military preparedness, and not simply in the indirect way that a pencil industry is, then there is very good justification for the maintenance of higher protection for that industry in order to make sure it does not fall before an onslaught of foreign competition. A second exception concerns what is known as the infant industry. If a manufacturer in a decreasing cost industry is just starting out in business, he might find himself in the situation where all he needs is to get his name and his sales routes established; then he could expand his output to a more efficient level such that the cost per unit would be smaller; then, and only then, he would be able to compete without protection. This case, while valid, is rare in practice and must be applied with care. The second minor exception to our general maximum of protection might be termed an anti-dumping provision; if foreign producers are willing to sell in our markets below cost,
either because they have an excess supply or because they receive a subsidy from their government, we should step in to protect American manufacturers. Outside of these three cases, no exceptions seem necessary to the maximum protection level.

VI. Conclusions

The subject matter of this paper might well be broken up into two parts. On the one hand there is the discussion of a new way of looking at the tariff structure, focusing on the degree of protection which a tariff gives to a certain manufacturer. On the other hand is a proposal for tariff reductions based on this new way of looking at the tariff structure. The proposal may seem like just one more in a series of schemes to get tariffs reduced. Perhaps it is. Yet the approach appears to the author to be one of the most accurate and defensible of any he has encountered. Perhaps one of the most basic challenges to it is the weakness of support for any free trade program in our country. Besides, to the extent that there is any free trade feeling, there is some question as to the degree to which it is founded on a rational basis, and not just "free trade for everybody—but me."

The greatest challenge is probably the statement, "Trade matters cannot be settled on their economic merits." In working for the achievement of some rational support for free trade, it seems to the author that any discussion which makes

for clearer thinking on the question of tariffs and tariff reductions, whether or not it leads to the adoption of a specific program proposed, is justified.
APPENDIX 1

Let $x$ protected conversion costs can exceed equally competitive unprotected conversion costs = effective level of protection.

$y = \text{ad valorem rate on finished product.}$

$z = \% \text{ raw material costs in total costs of protected producer.}$

$w = \text{ad valorem rate on raw materials.}$

$a = \text{total costs of unprotected producer.}$

$a_f a_y = \text{total costs of protected producer, to be equally competitive.}$

$z(a_f a_y) = \text{cost of raw materials of protected producer.}$

$\frac{z(a_f a_y)}{1_f w} = \text{cost of raw materials of unprotected producer.}$

Conversion costs of protected producer = $a_f a_y - z(a_f a_y)$

Conversion costs of unprotected producer = $a - z(a_f a_y) \frac{1_f w}{1_f w}$

Allowable difference of conversion costs, protected and unprotected, to be equally competitive with abroad =

$$x = \frac{a_f a_y - z(a_f a_y) - a_f z(a_f a_y)}{a - z(a_f a_y) \frac{1_f w}{1_f w}}$$

$$x = \frac{y \frac{f_w z}{w} - w z - w z y}{1_f w - z - z y}$$

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APPENDIX 2

Case 1  Hatters fur, where ad valorem equivalent rate is at maximum level of 35%

\[
3x = (2x \ y)1.35 \\
x = 4.5y \\
y = 0.22x
\]

Where ad valorem equivalent is at minimum rate of 15%

\[
3x = (2x \ y)1.15 \\
x = 1.64y
\]

Case 2  Hats, where raw materials tariff is 25%, and tariff on finished hats is 47.5%

\[
2x = (0.8x \ y)1.475 \\
x = 1.798y
\]
Case 3  Lapidary work: diamonds and rubies, tariff rate is 10% ad valorem

\[
3x = (2x + y)1.10
\]
\[
x = 1.375y
\]

All other precious stones, tariff rate is 5% ad valorem

\[
3x = (2x + y)1.05
\]
\[
x = 1.16 \frac{2}{3} y
\]
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